

ABSTRACT OF THE DISCLOSURE

A system for filtering data comprises a filtering database for storing layered rule tables and a data filtering engine coupled to the filtering database for filtering the input data using the layered rule tables. The data filtering engine filters or classifies input data using tests or rules performed on the data elements in the input data. The data elements are segments of data in the input data and are selected from the input data using a data element locator. Preferably, each rule table in the filtering database comprises a data element locator, a default rule, and zero or more filtering rules. The filtering rules comprise the tests or rules that are to be applied to the data elements. Each rule table corresponds to a single data element and each filtering rule in the rule table is to be applied to that data element.

In one embodiment, the system filters or classifies packets using tests or rules performed on protocol elements in the packet. Protocol elements are fields in the packet defined by a communication protocol and are selected from the packet using a protocol element locator. Each rule table in the filtering database comprises a protocol element locator, a default rule, and zero or more filtering rules. The filtering rules comprise the tests or rules that are to be applied to the protocol elements. Each rule table corresponds to a single protocol element and each filtering rule in the rule table is to be applied to that protocol element. Preferably, a packet filtering engine comprises a packet data buffer for storing portions of the packets, a rule evaluator for selecting the protocol element from the packet and for applying a filtering rule to the selected protocol element, and a protocol element locator buffer for storing the protocol element locator. The filtering database preferably comprises layered rule tables wherein a single rule table corresponds to a protocol element.